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AUTHOR WEINBERGER, JO ANN
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ABSTRACT

IN APPRAISING THE INDIVIDUALLY PRESCRIBED INSTRUCTION SYSTEM, THREE SOURCES OF INFORMATION WERE UTILIZED: A MAIN INSTRUMENT, THE DEGREE OF IMPLEMENTATION STUDY, AND TWO ADDITIONAL INVESTIGATIONS, THE REPORT OF STUDENT PROGRESS AND THE REPORT OF THE SCHOOL VISITATION MONITORS. TO DETERMINE THE DEGREE OF IMPLEMENTATION, A SAMPLE OF THE STUDENT PLACEMENT PROFILES AND PRESCRIPTIONS WAS ANALYZED WITH REGARD TO THE DIAGNOSTIC INSTRUMENTS AND INSTRUCTIONAL DECISIONS MADE BY TEACHERS. THE REPORT OF STUDENT PROGRESS IS A SUMMARY OF THE INDIVIDUAL STUDENT'S PROGRESS WHICH HAS BEEN PROGRAMED FOR THE COMPUTER. APPENDICES CONTAIN THE STATISTICAL DATA COLLECTED IN THESE STUDIES AND A GUIDE FOR THEIR INTERPRETATION. (JY)

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THE USE OF DATA

IN

MONITORING SCHOOL IMPLEMENTATION

OF

INDIVIDUALLY PRESCRIBED INSTRUCTION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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BY

JoAnn Weinberger

Research for Better Schools, Inc.

Philadelphia, Pa.

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EM007 769

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In the past many well-publicized educational innovations, after attracting widespread interest, failed when implemented outside their initial setting. A major cause of this poor record of implementation has been an absence of a detailed systematic specification for the control of the operation, coupled with a realistic method for monitoring and changing the implementation once it was operational in a given locale. For the IPI project, the goals and elements are set forth in the training materials, and the task remains one of appraising and, if necessary, improving the degree to which they have been incorporated.

A monitoring and evaluation system has therefore been devised to meet the following purposes:

1. To assist the school personnel in evaluating and improving their program by providing feedback on their use of the system along with ways in which they can improve.
2. To appraise the training materials by determining if the goals and elements of IPI are upheld in the field settings.
3. To provide the Learning Research and Development Center and Research for Better Schools developmental information for refining and improving the IPI system.

Basically, the appraisal system utilizes three sources of information: a main instrument, the Degree of Implementation Study, and two

additional investigations, the Report of Student Progress and the report of the school visitation monitors.

Since IPI provides an operational framework consisting of clearly defined steps and strategies for individualizing instruction, the main study, the Degree of Implementation report, was designed to test how well these operational criteria are met by the teachers. These criteria fall into three major categories: 1) the use of diagnostic instruments, 2) the use of instructional materials and settings, and 3) the use of planning sessions.

To obtain the information needed to make the analysis regarding the use of the diagnostic instruments and of the instructional materials and settings, all profiles (which show the results of the placement testing) and all prescription sheets (which represent the program of studies for each unit) were collected for ten students* per class for 570 classes. A total of 12,000 prescription sheets were evaluated containing 80,000 mastered skills. After the placement profiles were analyzed manually to determine the percentage of correct administrations, pertinent information from the prescription sheets was coded onto a transfer document, and keypunched. A computer program was written to obtain the numerical data necessary to answer the questions posed for each of the categories.

The first category considered in the report deals with diagnostic instruments. The four diagnostic instruments used in the IPI system (placement, pretests, posttests, and curriculum-embedded tests) provide a continual diagnosis of the pupils' mastery of subject content. In

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* The pupils selected for the sample were the first five children and the last five children in the class when the names were put in alphabetical order.

evaluating the use of these tests, the required standards of performance were whether or not the tests were given at the correct times and if the established mastery criterion was upheld.

To determine the degree of implementation, the following questions were asked:

1. Do teachers administer the placement tests properly?
2. Do pupils begin work at points in the continuum consistent with placement test results?
3. Is the unit pretest given for each unit begun and are all skills tested?
4. Are Curriculum-Embedded Tests used properly?
5. Are prescriptions written in accord with unit pretest results?
6. Are posttests used properly?

The second category studied was the instructional decisions a teacher makes in forming a program of studies prescription for a student. A diagnosis of the learning needs of the pupils and the objectives to be mastered should result in a variety of materials and settings used. To describe the decisions made for the pupils, reports are generated as follows:

1. For each type of instructional materials and settings used, the percentage was calculated. A student should not always work alone nor should he only learn by completing worksheets.
2. The variability in the number of worksheets which constitute the <u>first</u> prescription for each skill was analyzed. Since pupils should receive prescriptions of differing length, the median, 25th, and 75th percentiles were computed. In addition, the appropriateness of the assignments for a skill and the teacher's ability to predict the pupils' knowledge and under-

standing may be judged by the number of Curriculum-Embedded Tests required for mastery when interpreted in light of the median number of pages. Therefore, the mean number of tests prescribed was calculated.

The initial analysis was completed during October and November of 1968. Each teacher received a report representing her performance based on the data collected. If the degree of implementation for a particular question was below 100%, an example of an error was printed out which included the pupil's number and the unit in which the mistake was found. In this way, the teachers could re-examine the materials to better understand the error. In addition, school and national summaries were compiled.

A second data collection and analysis, taking place in March 1969, has been scheduled to allow time for the school personnel to analyze the results from the Fall Report and to make improvements where necessary.

The results from the National Summary for November, March, and the November-March Comparison along with a complete guide for its interpretation may be found in Tables I-III. (All tables appear in the Appendix.)

The third data source is the planning sessions which play an integral role in IPI by allowing teachers to plan together as an instructional team. Information on the nature and frequency of these meetings in each school aids in the analysis of the problems found in implementing IPI and their solutions, as well as providing data on the type of continuous training occurring in the school. A machine-scannable form was devised to be completed by the planning session leader after each meeting. The forms are forwarded to Research for Better Schools at the end of each month for processing at the end of the school year. A copy of this form can be found in the Appendix.

The next major area of evaluation involves the Report of Student Progress. This report is compiled from a computer data bank file, which was established in September, containing IPI placement information for the 15,191 pupils in the program. At three times during the 1968-69 school year--November, February and May--this file is updated to include placement information for new pupils and progress data for all students. The computer printouts of the updated information in the file are made available as rapidly as possible. These data may be viewed on many levels depending on the orientation of the user, be he teacher, administrator, school monitor, or researcher.

Teachers and school administrators may examine this information to determine the academic progress each pupil has made at different points in time during the school year. In addition, by looking at overall class trends, they can answer the questions "At what rate are pupils progressing through the continuum?", and "How much have the pupils learned?" For example, based on the placement data collected in September, the teachers received information depicting the dispersion of the students within their classes. A typical example of September placement results for one class is presented in Table IV. The National Summary results of September's placement are presented by grade and across grades in Table V.

After the November update, the teachers received complete reports, similar to the abstracted ones found in Tables VI and VII, which showed not only where the pupils were currently working, but also the amount of progress they made in the six weeks since their initial placement. By re-examining the class dispersion in terms of the units in the continuum in

which pupils are currently working and also in the number of skills the pupils have completed, the teacher has concise information about what each child has mastered. This enables her to investigate why certain pupils may have mastered 20-30 skills during the period, while others have only mastered 1-10.

For the research and development groups examining the schools in terms of how well they are implementing the IPI system, the progress the pupils are making in the continuum is of the utmost importance. If the IPI goals of "Every pupil makes regular progress towards mastery of instructional content," and "Every pupil proceeds to mastery of instructional content at his own rate" are being upheld within the field testing sites, then the following should result: 1) Between two points in time, there should be variation in the number of skills mastered across pupils; for example, all pupils should not have mastered five skills. 2) For different periods in time, there should be dispersion in the number of skills mastered for any given pupil. 3) At any given point in time, the pupils in any class should be dispersed along the continuum. These three statements are not necessarily the only way to operationalize the concept of individualization. However, if the pupils in a class do not illustrate these three elements, then individualization is not occurring.

In addition, for developmental purposes, it is also important to trace the progress of all pupils throughout the nation through the IPI continuum. The National Summary in Table VIII showing the pupils' status in November provides this data. Summaries have also been compiled illustrating the number of skills completed by pupils along two dimensions:

1. For November and February the mean number of skills completed since placement by grade and across grades. (Tables IX and X.)
2. For November and February, the mean and standard deviation of skills completed in each area by pupil's current status. (Table XI.)

The third source of information on the extent to which IPI is being implemented correctly originates from the monitoring and resource team whose members make periodic visits to each of the schools. A written report is thus provided from a direct onsite evaluation by a trained observer.

In addition to collecting data on the elements needed to help the school personnel implement the IPI model, the team actually assists in effecting change by:

1. Aiding in the continuous training of the teachers and administrators.
2. Helping the school personnel adjust to the evolutionary changes in the school climate which are the inevitable results of the installation of IPI. In general, schools appear to follow a path which begins with a concern for system detail and mechanics, proceeds to functional group discussion and planning, and finally leads to a fairly sophisticated level characterized by concern with the theoretical implications and developmental aspects of the program.

3. Providing any other assistance which the school requests in connection with IPI; for example, questions arise concerning the theory of individualization, the rationale behind the curriculum, the need for class scheduling, and the organization of a materials center.

The information from the Degree of Implementation and Report of Student Progress is provided to help the implementation team work with the schools. This team's efforts become imperative in terms of helping the schools use and interpret the large amount of information which is available in improving their operation.

In summary, although the general results as reported in the National Summary of the Degree of Implementation are quite good, the teachers' use of the diagnostic instruments shows the need for improvements; e.g. in the teacher training materials and in the schools' use of the IPI tests.

The Report of Student Progress illustrates that all classes showed a wide dispersion of their entering behavior into the IPI continuum and that variability was present in the number of skills completed by the pupils from placement to November 6.

With these data and the reports from the monitoring teams, the needed feedback has been given to the schools and the research and development teams to effect change. One conclusion to be drawn is that the overall strategy set up by Learning Research and Development Center and Research for Better Schools for diffusing IPI mathematics appears to be effective

APPENDIX A

DEGREE OF IMPLEMENTATION

DEGREE OF IMPLEMENTATION RESULTS

GUIDE FOR INTERPRETATION

The guide for interpreting the results of each question is as follows:

1. Do teachers administer the placement tests properly?

   Since placement tests are used to enter a student into the mathematics continuum and serve as the starting point for finer, more discriminating diagnosis, it is very important that they be given correctly. To assess the degree to which the children in each class were properly placement tested, profiles were checked with respect to the correct test given according to the following criteria:

   A. In a given unit, e.g. C-Num, if a child scored

      (1) 0 - 20, he should have been given the B-Num test;
      (2) 21 - 79, he should be placed in C-Num;
      (3) 80 -100, he should have been given the D-Num test.

      For each time the rule is violated, a count of minus one point is given.

      This is Type 1 error.

   B. According to the basic rules of placement testing, if a child needs to take any test in Level C, he should also take C-Combination of Processes; if a child needs to take any test in Level D, he should also take D-Multiplication and D-Division.

      If C-COP should have been given and was not given, this counts as half an error.

      If D-Multiplication and/or D-Division should have been given and were not given, this counts as half an error.

      This is Type 2 error.

C. If the children are given the correct test but placement is wrong, this counts as half an error per area.

This is a Type 3 error.

If the number of error points accumulated on a profile is two or higher, this profile is counted as a reject.

2. Do pupils begin work at points in the continuum consistent with placement test results?

Since the units are carefully sequenced, the mastery of each unit is generally dependent upon mastery of the preceding unit.

The placement tests determine the units to be studied and the continuum specifies the sequence of the units to be mastered. Therefore, the student should work in the necessary units in the order in which they are sequenced in the continuum.

Utilizing the placement information and prescriptions which were sent to RBS, a comparison was made to determine if the pupils started in the continuum correctly.

3. Is the unit pretest given for each unit begun?

With the exception of Level A, unit pretests are available and should be administered for <u>all</u> skills. The results are then used to analyze the specific mathematics skills the student has yet to master within a particular unit.

An error occurs if the pretest is not administered or if a partial pretest is given.

4. Are prescriptions written in accordance with unit pretest results?

Prescriptions should be written for all skills with pretest scores below mastery (84% or less), unless teacher judgment is indicated. For this question a "prescription" is defined as the assignment of materials, settings, or a Curriculum-Embedded Test.

5. Are prescriptions different for different pupils working in the same skill?

In IPI, instructional decisions are choices a teacher makes in forming a unique program of studies for a student. A diagnosis of the learning needs of the pupils and the objectives to be mastered should result in a variety of materials and settings used.

To describe the decisions made for the pupils, the following reports were generated:

Instructional Techniques (IT):

IPI offers a framework within which to individualize instruction and some prepared materials to help in the task. However, since the Standard Teaching Sequence (STS) pages are not sufficient for individualizing instruction, the IPI teacher needs to utilize a variety of settings and materials.

Each prescription written consists of a combination of the two types of instructional techniques: settings and materials. A short description of these techniques follows:

SETTINGS

ALONE: if a pupil works in materials, but does not have any of the following settings, he is said to work by himself.

01 Teacher Tutor: A child has been tutored when the teacher aids him in explaining, questioning, creating a worksheet, etc. This does not include the reading of directions.

02 Peer Tutor: Another student assists this student with a particular skill.

03 Small Group Instruction: Two to ten students are brought together for instruction on a particular skill.

04 Large Group Instruction: Eleven or more students are brought together for instruction on a particular skill.

05 Seminar: Large group instruction on more than one skill is the focus of the instruction. An example might be a discussion of the use of time applying all the skills from a particular level.

07 Independent Study: A student is working independently searching for information on a problem. This setting does not refer to a pupil working alone in the Standard Teaching Sequence, but may often be used alone with Research (10).

11 Tutor of Others: This student is used to tutor another student. If this student is receiving the tutoring then it should be recorded as 02.

MATERIALS

STS: The pupil worked in one or more pages in the Standard Teaching Sequence.

06 Curriculum Texts: This includes the use of any textbook which is used for the teaching of a particular skill.

08 Film Strips: This would include the use of any film or filmstrips.

09 Records/Tapes: This would include the use of any records, tapes or other audio devices that are used to teach a particular skill.

10 Research: The pupil uses books and/or other materials to learn a skill or group of skills. This work may go beyond simple mastery to include the use of the skill in problem solving.

12 Manipulative Devices: A child is assigned a manipulative device which aids the teaching of a particular skill.

Variability of Prescriptions:

After analyzing the pretest scores and selecting the first skill needing work, the decision is made regarding the instructional settings and materials which will constitute the "first prescription". If STS pages are prescribed the total number of pages should vary among pupils working on the same and different skills.

To determine this, the following information is included in the report:

a. MEDIAN NUMBER OF PAGES: The number of pages prescribed such that 50% of the pupils were prescribed more pages and 50% of the pupils prescribed fewer pages.

   For example, if the median is 6, it means that half of the prescriptions were for more than 6 pages and half were for less than 6 pages.

b. 25% OF THE CASES ARE BELOW ____: 25% of the 1st prescriptions included fewer than this number of pages.

   For example, if 25% of the cases are below 4, it means that 25% of the prescriptions were for less than 4 pages.

c. 25% OF THE CASES ARE ABOVE ____: The number of pages prescribed such that 25% of the first prescriptions included more pages.

   For example, if 25% of the cases are above 9, it means that one-fourth of the first prescriptions were for greater than 9 pages.

Another way to determine the variability of prescriptions is to examine the average number of CETs to mastery. Since all pupils working in a skill complete at least one CET, the average number to mastery should be between one and two. If the average number of CETs is greater than two, the causes may be:

1. The teacher consistently does not look carefully at workpage scores so that she can predict when the pupils are ready for CETs.

2. The teacher has adopted a pattern of prescribing a few pages and then a test, a few pages and then a test, for all pupils regardless of their present scores and her knowledge of their abilities.

3. The teacher assigns CETs before workpages to nearly all pupils and not just to ones with borderline pretest scores or score conflicts. (See explanation of question 5 for definition of score conflicts.)

4. The teacher unnecessarily requires the pupil to master two successive CETs before accepting that the pupil has mastered the skill.

If the average number of CETs is very close to 1.00 and the median number of pages in the first prescription is very high (perhaps 8 to 10 or more), this may indicate another problem. In such cases, nearly all the pupils pass the first CET, but many of them may be receiving unnecessarily long prescriptions.

6. Are Curriculum-Embedded Tests used properly?

To monitor the student's progress as he works on his prescription and moves from skill to skill within a unit, CETs should be administered. This diagnostic instrument has two parts and should be utilized as follows:

Part I: A CET should be given after a child completes work (pages or IT) in a skill. If he does not show mastery on this CET (a score of 84% or less), follow-up work should be assigned and the alternate form of the CET given. Pupils should not be given a second CET if the first is mastered.

A child may be given a CET without a preceding work assignment if his pretest score was on the borderline of mastery. Again this CET should be followed up with work and/or another CET only if it is failed.

Part II: Since this is a limited pretest of the next skill, mastery or lack of mastery adds information for decision making in two ways:

1. If the score on this part conflicts with the pretest score, the pupil's knowledge should be verified by giving the whole CET for that skill. A transfer of information (and sometimes confusion) between skills often results in a disagreement or conflict between the pupil's pretest score on a skill and his corresponding CET Part II score. Such conflicts should be followed up by a prescription of CET Part I. An error occurs when CET Part II causes a conflict and is not followed by CET Part I of the next skill.

2. Since the pupil should be given every opportunity to test out of a skill, the possibility of transfer between skills needs to be recognized. Therefore, for example, if a pupil works on B-Add-3, then skips to B-Add-6, he should take the CET Part II for B-Add-5 as a short pretest for B-Add-6.

7. Are posttests used properly?

To determine mastery of the unit skills after instruction is given, the posttest should be administered. Since posttest scores below mastery (84% or less) indicate a lack of unit mastery, instruction on the deficient skills must be prescribed as a follow-up.

TABLE I

DEGREE OF IMPLEMENTATION

OF

INDIVIDUALLY PRESCRIBED INSTRUCTION

NATIONAL SUMMARY REPORT

FALL 1968

RESEARCH FOR BETTER SCHOOLS, INC.
SUITE 1700-1700 MARKET STREET
PHILADELPHIA, PENNSYLVANIA 19103

NATIONAL SUMMARY REPORT-ALL SCHOOLS

TABLE I

FALL 1968

1A. DO TEACHERS ADMINISTER THE PLACEMENT TESTS PROPERLY?

NUMBER OF PROFILES:	6772
NUMBER CORRECT:	5569
PERCENTAGE OF ACCURACY:	82%

S

1B. DO PUPILS BEGIN WORK AT POINTS IN THE CONTINUUM CONSISTENT WITH PLACEMENT TEST RESULTS?

NUMBER OF PROFILES:	3986
NUMBER OF ACCURATE STARTS:	3529
PERCENTAGE OF ACCURACY:	88%

*COMPUTED ONLY IN THE FALL

TABLE I (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

FALL 1968

2. IS THE UNIT PRETEST GIVEN FOR EACH UNIT BEGUN?

TOTAL NUMBER OF UNITS BEGUN	15234
NUMBER OF SKILLS FOR WHICH ALL SKILLS WERE PRETESTED	14619
PERCENTAGE OF ACCURACY	96%

3. ARE PRESCRIPTIONS WRITTEN IN ACCORD WITH UNIT PRETEST RESULTS?

NUMBER OF SKILLS BELOW 85% ON PRETEST	27772
NUMBER OF SKILLS IN WHICH CHILDREN WORKED BEFORE TAKING THE POSTTEST	25463
PERCENTAGE OF ACCURACY	92%

*COMPUTED IN THE FALL

TABLE I (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

FALL 1968

4. ARE PRESCRIPTIONS DIFFERENT FOR DIFFERENT PUPILS?

A. INSTRUCTIONAL TECHNIQUES - SETTINGS

TECHNIQUE	FREQUENCY	% USAGE
ALONE	18532	75%
01	3781	15%
02	311	1%
03	353	1%
04	173	1%
05	799	3%
07	1025	4%
11	38	0%
TOTAL	25012	100%

B. INSTRUCTIONAL TECHNIQUES - MATERIALS

TECHNIQUE	FREQUENCY	% USAGE
STS	27149	97%
06	183	1%
08	24	0%
09	36	0%
10	5	0%
12	540	2%
TOTAL	27937	100%

C. VARIABILITY OF PRESCRIPTIONS

(1) PAGES IN FIRST PRESCRIPTION

MEDIAN NUMBER OF PAGES	4.88
25% OF THE CASES ARE BELOW	3.65
25% OF THE CASES ARE ABOVE	6.68

*COMPUTED IN THE FALL

(2) AVERAGE NUMBER OF CETS TO MASTERY* 1.31

TABLE I (CONTD.

NATIONAL SUMMARY REPORT-ALL SCHOOLS

FALL 1968

5. ARE CURRICULUM-EMBEDDED TESTS USED PROPERLY?

A. IF A CET IS FAILED, IS THERE A FOLLOW-UP?

NUMBER OF CETS FAILED	6765
NUMBER OF FOLLOW-UPS OF FAILED CETS	5882
PERCENTAGE OF ACCURATE FOLLOW-UPS	87%

B. IF A CET IS PASSED, IS THERE A FOLLOW-UP?

NUMBER OF CETS PASSED	22547
NUMBER OF FOLLOW-UPS OF PASSED CETS	3014
PERCENTAGE OF UNNECESSARY FOLLOW-UPS	9%

C. IS PART 2 OF THE CET USED FOR DIAGNOSIS?

(1) WHEN A CONFLICT IS INDICATED BETWEEN THE PRETEST SCORE AND THE PART 2 SCORE

NUMBER OF CONFLICTS	7220
NUMBER OF TIMES CET IS PRESCRIBED FIRST	3637
PERCENTAGE OF TIMES CET IS PRESCRIBED FIRST	50%

(2) WHEN PRETEST SHOWS SKILLS CAN BE SKIPPED

NUMBER OF OCCURENCES	3937
NUMBER OF TIMES PART 2 IS PRESCRIBED FIRST	173
PERCENTAGE OF TIMES PART 2 IS PRESCRIBED FIRST	4%

(3) AVERAGE OF (1) AND (2) 34%

*COMPUTED IN THE FALL

TABLE I (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

FALL 1968

6. ARE POSTTESTS USED PROPERLY?

IF A CHILD FAILS THE POSTTEST, IS THERE A FOLLOW-UP?

NUMBER OF SKILLS FAILED ON THE FIRST POSTTEST	8393
NUMBER OF FOLLOW-UPS	6009
PERCENTAGE OF ACCURATE FOLLOW-UPS	72%

*COMPUTED IN THE FALL

RESEARCH FOR BETTER SCHOOLS, INC.
121 South Broad Street
Philadelphia, Pa. 19107

SCHOOL _____ DATE _____

NAME _____
(person filling out this form)

AGENDA

Was a prepared agenda used? ___ yes ___ no

If yes, made by (mark more than one if applicable)

___ Principal
___ Coordinator
___ Teacher
___ Other (specify) _____

PLEASE ATTACH A COPY OF THE AGENDA

TOPICS DISCUSSED
(mark more than one if applicable)

___ Individual students
___ Group of students
___ Review of IPI manuals and procedures
___ Summary information of progress
___ Seminars
___ Mathematics
___ Reading
___ Other subjects (specify) _____
___ Formation of small groups of students
___ Solutions to operational difficulties (i.e., time, space, and personnel)
___ Classroom management (e.g. discipline, movement of children)
___ Other innovations
___ Other (specify on the other side of this sheet)

ATTENDANCE BY TYPE OF GRADE

NUMBER OF EXTRA TEACHERS — Nmbr of Tchrs

GRADE TYPE (choose one) — Nmbr of Tchrs
REGULAR: K 1 2 3 4 5 6
GIFTED: 1 2 3 4 5 6
SPECIAL: P 1 2 3 4 5 6
NON-GRADED: P 1 2 3 4 5 6

GRADE TYPE (choose one) — Nmbr of Tchrs
REGULAR: K 1 2 3 4 5 6
GIFTED: 1 2 3 4 5 6
SPECIAL: P 1 2 3 4 5 6
NON-GRADED: P 1 2 3 4 5 6

SCHOOL CODE

GRADE TYPE (choose one) — Nmbr of Tchrs
REGULAR: K 1 2 3 4 5 6
GIFTED: 1 2 3 4 5 6
SPECIAL: P 1 2 3 4 5 6
NON-GRADED: P 1 2 3 4 5 6

GRADE TYPE (choose one) — Nmbr of Tchrs
REGULAR: K 1 2 3 4 5 6
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SPECIAL: P 1 2 3 4 5 6
NON-GRADED: P 1 2 3 4 5 6

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NON-GRADED: P 1 2 3 4 5 6

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GIFTED: 1 2 3 4 5 6
SPECIAL: P 1 2 3 4 5 6
NON-GRADED: P 1 2 3 4 5 6

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GIFTED: 1 2 3 4 5 6
SPECIAL: P 1 2 3 4 5 6
NON-GRADED: P 1 2 3 4 5 6

GRADE TYPE (choose one) — Nmbr of Tchrs
REGULAR: K 1 2 3 4 5 6
GIFTED: 1 2 3 4 5 6
SPECIAL: P 1 2 3 4 5 6
NON-GRADED: P 1 2 3 4 5 6

LENGTH OF SESSION IN MINUTES
___ 0-15
___ 16-30
___ 31-45
___ 46-60
___ 61-80
___ 81 or more

UTILITY FORM 4721

OPTICAL SCANNING FORMS • OPTICAL SCANNING CORPORATION • PHILADELPHIA

TABLE II

DEGREE OF IMPLEMENTATION

OF

INDIVIDUALLY PRESCRIBED INSTRUCTION

NATIONAL SUMMARY REPORT

SPRING 1969

RESEARCH FOR BETTER SCHOOLS, INC.
SUITE 1700-1700 MARKET STREET
PHILADELPHIA, PENNSYLVANIA 19103

TABLE II (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

2. IS THE UNIT PRETEST GIVEN FOR EACH UNIT BEGUN?

TOTAL NUMBER OF UNITS BEGUN	9038
NUMBER OF UNITS FOR WHICH ALL SKILLS WERE PRETESTED	8683
PERCENTAGE OF ACCURACY	96%

3. ARE PRESCRIPTIONS WRITTEN IN ACCORD WITH UNIT PRETEST RESULTS?

NUMBER OF SKILLS BELOW 85% ON PRETEST	17212
NUMBER OF SKILLS IN WHICH CHILDREN WORKED BEFORE TAKING THE POSTTEST	16132
PERCENTAGE OF ACCURACY	94%

TABLE II (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

4. ARE PRESCRIPTIONS DIFFERENT FOR DIFFERENT PUPILS WORKING IN THE SAME SKILL?

A. INSTRUCTIONAL TECHNIQUES - SETTINGS

TECHNIQUE	FREQUENCY	% USAGE
ALONE	10307	72%
01	2394	17%
02	339	2%
03	192	1%
04	120	1%
05	518	4%
07	415	3%
11	40	0%
TOTAL	14325	100%

B. INSTRUCTIONAL TECHNIQUES - MATERIALS

TECHNIQUE	FREQUENCY	% USAGE
STS	13352	96%
06	146	1%
08	19	0%
09	24	0%
10	20	0%
12	465	3%
TOTAL	14026	100%

C. VARIABILITY OF PRESCRIPTIONS

(1) PAGES IN FIRST PRESCRIPTION

MEDIAN NUMBER OF PAGES	4.16
25% OF THE CASES ARE BELOW	3.03
25% OF THE CASES ARE ABOVE	5.48

(2) AVERAGE NUMBER OF CETS TO MASTERY 1.31

TABLE II (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

5. ARE CURRICULUM-EMBEDDED TESTS USED PROPERLY?

A. IF A CET IS FAILED, IS THERE A FOLLOW-UP?

NUMBER OF CETS FAILED	4258
NUMBER OF FOLLOW-UPS OF FAILED TESTS	3800
PERCENTAGE OF ACCURATE FOLLOW-UPS	89%

B. IF A CET IS PASSED, IS THERE A FOLLOW-UP?

NUMBER OF CETS PASSED	13404
NUMBER OF FOLLOW-UPS OF PASSED CETS	888
PERCENTAGE OF UNNECESSARY FOLLOW-UPS	7%

C. IS PART 2 OF THE CET USED FOR DIAGNOSIS?

(1) WHEN A CONFLICT IS INDICATED BETWEEN THE PRETEST SCORE AND THE PART-2 SCORE

NUMBER OF CONFLICTS	4955
NUMBER OF TIMES CET IS PRESCRIBED FIRST	2912
PERCENTAGE OF TIMES CET IS PRESCRIBED FIRST	59%

(2) WHEN PRETEST SHOWS SKILLS CAN BE SKIPPED

NUMBER OF OCCURENCES	2595
NUMBER OF TIMES PART 2 IS PRESCRIBED FIRST	385
PERCENTAGE OF TIMES PART 2 IS PRESCRIBED	15%

(3) AVERAGE OF (1) AND (2) 44%

TABLE II (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

6. ARE POSTTESTS USED PROPERLY?

IF A CHILD FAILS THE POSTTEST, IS THERE A FOLLOW-UP?

NUMBER OF SKILLS FAILED ON THE FIRST POSTTEST	4960
NUMBER OF FOLLOW-UPS	4224
PERCENTAGE OF ACCURATE FOLLOW-UPS	85%

TABLE III

DEGREE OF IMPLEMENTATION

OF

INDIVIDUALLY PRESCRIBED INSTRUCTION

NATIONAL SUMMARY REPORT

FALL-SPRING COMPARISON

1968-1969

RESEARCH FOR BETTER SCHOOLS, INC.
SUITE 1700-1700 MARKET STREET
PHILADELPHIA, PENNSYLVANIA 19103

TABLE III (CONTD.)
NATIONAL SUMMARY REPORT-ALL SCHOOLS

1A. DO TEACHERS ADMINISTER THE PLACEMENT TESTS PROPERLY?

FALL RESULTS*: 82%

1B. DO PUPILS BEGIN WORK AT POINTS IN THE CONTINUUM CONSISTENT WITH PLACEMENT TEST RESULTS?

FALL RESULTS*: 88%

*COMPUTED ONLY FOR FALL REPORT.

TABLE III (CONTD.)
NATIONAL SUMMARY REPORT-ALL SCHOOLS

2. IS THE UNIT PRETEST GIVEN FOR EACH UNIT BEGUN?

FALL RESULTS	96%
SPRING RESULTS	96%
DIFFERENCE	0

3. ARE PRESCRIPTIONS WRITTEN IN ACCORD WITH UNIT PRETEST RESULTS?

FALL RESULTS	92%
SPRING RESULTS	94%
DIFFERENCE	+

* COMPUTED FOR FALL REPORT ONLY.

TABLE III (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

4. ARE PRESCRIPTIONS DIFFERENT FOR DIFFERENT PUPILS WORKING IN THE SAME SKILL?

A. INSTRUCTIONAL TECHNIQUES - SETTINGS

TECHNIQUE	FALL RESULTS	SPRING RESULTS	DIFFERENCE
ALONE	75%	72%	-
01	15%	17%	+
02	1%	2%	+
03	1%	1%	0
04	1%	1%	0
05	3%	4%	0
07	4%	3%	-
11	0%	0%	0

B. INSTRUCTIONAL TECHNIQUES - MATERIALS

TECHNIQUE	FALL RESULTS	SPRING RESULTS	DIFFERENCE
STS	97%	96%	-
06	1%	1%	0
08	0%	0%	0
09	0%	0%	0
10	0%	0%	0
12	2%	3%	+

C. VARIABILITY OF PRESCRIPTIONS

(1) PAGES IN FIRST PRESCRIPTION

	FALL RESULTS	SPRING RESULTS	DIFFERENCE
MEDIAN NUMBER OF PAGES	4.88	4.16	-
25% OF THE CASES ARE BELOW	3.65	3.03	-
25% OF THE CASES ARE ABOVE	6.68	5.48	-

(2) AVERAGE NUMBER OF CETS TO MASTERY

FALL RESULTS	SPRING RESULTS	DIFFERENCE
1.31	1.31	0

TABLE III (CONTD.)
NATIONAL SUMMARY REPORT-ALL SCHOOLS

5. ARE CURRICULUM-EMBEDDED TESTS USED PROPERLY?

A. IF A CET IS FAILED, IS THERE A FOLLOW-UP?

FALL RESULTS	87%
SPRING RESULTS	89%
DIFFERENCE	+

B. IF A CET IS PASSED, IS THERE A FOLLOW-UP?

FALL RESULTS	9%
SPRING RESULTS	7%
DIFFERENCE	-

C. IS PART 2 OF THE CET USED FOR DIAGNOSIS?

(1) WHEN A CONFLICT IS INDICATED BETWEEN THE PRETEST SCORE AND THE PART 2 SCORE

FALL RESULTS	50%
SPRING RESULTS	59%
DIFFERENCE	+

(2) WHEN A PRETEST SHOWS SKILLS CAN BE SKIPPED

FALL RESULTS	4%
SPRING RESULTS	15%
DIFFERENCE	+

(3) AVERAGE OF (1) AND (2)

FALL RESULTS	34%
SPRING RESULTS	44%
DIFFERENCE	+

TABLE III (CONTD.)

NATIONAL SUMMARY REPORT-ALL SCHOOLS

6. ARE POSTTESTS USED PROPERLY?

IF A CHILD FAILS THE POSTTEST, IS THERE A FOLLOW-UP?

FALL RESULTS	72%
SPRING RESULTS	85%
DIFFERENCE	+

APPENDIX B

REPORT OF STUDENT PROGRESS

BLDG. NO. 00001 GRADE TABLE IV

SECTION 10 DATE 9/30/68

REPORT FROM
RESEARCH FOR BETTER SCHOO
121 S. BROAD ST.
PHILADELPHIA, PA.

LEVEL	NUM FREQ	NUM PRCNT	P.V. FREQ	P.V. PRCNT	ADD FREQ	ADD PRCNT	SUB FREQ	SUB PRCNT	MULT FREQ	MULT PRCNT	DIV FREQ	DIV PRCNT	C.O.P. FREQ	C.O.P. PRCNT	FRAC FREQ	FRAC PRCNT	MONEY FREQ	MONEY PRCNT	TIME FREQ	TIME PRCNT	S.C.M. GEOM FREQ	S.C.M. GEOM PRCNT	FR FREQ	FR PRCNT
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B	0	0	1	4	1	4	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4	15	1	4
C	4	15	1	4	1	4	5	19	0	0	0	0	6	22	17	63	1	4	9	33	7	26	4	15
D	15	56	7	26	5	19	15	56	11	41	16	59	10	37	7	26	22	81	9	33	15	56	20	74
E	6	22	17	63	12	44	5	19	15	56	11	41	10	37	3	11	2	7	7	26	1	4	2	7
F	2	7	1	4	3	11	0	0	1	4	0	0	1	4	0	0	2	7	1	4	0	0	0	0
G	0	0	0	0	4	15	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

N= 27

TABLE V

BLDG. NO. GRADE (COUNTRY ONLY)

SECTION DATE 9/30/68

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, PA

LEVEL	NUM		P.V.		ADD		SUB		MULT		DIV		C.O.P.		FRAC		MONEY		TIME		S.O.M		GEOM	
	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT
A	1861	11	0	0	1162	7	0	0	0	0	0	0	0	0	1476	9	0	0	0	0	1	0	1	0
B	2702	17	5887	36	1549	9	0	0	0	0	1	0	1	0	3189	19	4948	30	5142	31	6542	40	3190	19
C	4548	28	2373	15	4381	27	7462	46	0	0	0	0	9658	59	7535	46	3111	19	5544	34	3310	20	3665	22
D	4929	30	3832	23	2921	18	4657	28	10306	63	12088	74	3631	22	2103	13	5529	34	2965	18	4615	28	6803	42
E	1491	9	3074	19	2736	17	2286	14	4434	27	2634	16	2081	13	1488	9	1534	9	1343	8	1270	8	1975	12
F	682	4	590	4	1934	12	1108	7	1437	9	1440	9	481	3	474	3	1227	7	1151	7	550	3	670	4
G	134	1	386	2	1434	9	810	5	148	1	187	1	462	3	91	1	12	0	217	1	75	0	59	0
H	16	0	221	1	246	2	40	0	39	0	13	0	49	0	7	0	2	0	1	0	0	0	0	0

N=16363

TABLE V-A

BLDG. NO. GRADE 1 (COUNTRY/GRADE)

SECTION DATE 9/30/68

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, PA

LEVEL	NUM FREQ	NUM PRCNT	P.V. FREQ	P.V. PRCNT	ADD FREQ	ADD PRCNT	SUB FREQ	SUB PRCNT	MULT FREQ	MULT PRCNT	DIV FREQ	DIV PRCNT	C.C.P. FREQ	C.C.P. PRCNT	FRAC FREQ	FRAC PRCNT	MONEY FREQ	MONEY PRCNT	TIME FREQ	TIME PRCNT	S.O.M FREQ	S.O.M PRCNT	GEOM FREQ	GEOM PRCNT
A	1012	62	0	0	608	37	0	0	0	0	0	0	0	0	495	30	0	0	0	0	0	0	0	0
B	522	32	1585	97	414	25	0	0	0	0	0	0	1	0	632	39	1442	88	1344	82	1610	99	776	48
C	99	6	47	3	604	37	1631	100	0	0	0	0	1616	99	503	31	162	10	289	18	22	1	580	36
D	0	0	1	0	7	0	2	0	1562	96	1560	96	15	1	3	0	29	2	0	0	1	0	276	17
E	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
F	0	0	0	0	0	0	0	0	71	4	72	4	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

N= 1633

...SHEET PRESCRIBED INSTRUCTION ...

TABLE V-B

BLDG. NO. GRADE 7 (COUNTRY/GRADE)

SECTION DATE 9/30/68

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, PA

LEVEL	NUM FREQ	NUM PRCNT	P.V. FREQ	P.V. PRCNT	ADD FREQ	ADD PRCNT	SUB FREQ	SUB PRCNT	MULT FREQ	MULT PRCNT	DIV FREQ	DIV PRCNT	C.O.P. FREQ	C.O.P. PRCNT	FRAC FREQ	FRAC PRCNT	MONEY FREQ	MONEY PRCNT	TIME FREQ	TIME PRCNT	S.O.M GEOM FREQ	S.O.M GEOM PRCNT
A	226	9	0	0	90	4	0	0	0	0	0	0	0	0	327	13	0	0	0	0	0	0
B	959	38	1670	67	615	25	0	0	0	0	0	0	0	0	773	31	1231	49	1355	54	1936	78	928	37
C	1103	44	612	25	1484	59	2188	88	0	0	0	0	2326	93	1342	54	809	32	1077	43	458	18	811	33
D	193	8	181	7	291	12	305	12	2436	98	2442	98	166	7	51	2	452	18	57	2	100	4	733	29
E	4	0	32	1	12	0	1	0	8	0	1	0	3	0	1	0	2	0	5	0	1	0	23	1
F	0	0	0	0	2	0	0	0	50	2	52	2	0	0	1	0	0	0	1	0	0	0	0	0
G	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

N= 2495

Table V-C

BLDG. NO.

GRADE 3 (COUNTRY/GRADE)

SECTION

DATE 9/30/68

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, P.

LEVEL	NUM		P.V.		ADD		SUB		MULT		DIV		C.O.P.		FRAC		MONEY		TIME		S.O.M		GEOM	
	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT
A	56	2	0	0	5	0	0	0	0	0	0	0	0	0	126	5	0	0	0	0	0	0	0	0
B	400	16	755	30	95	4	0	0	0	0	0	0	0	0	518	20	472	19	695	27	912	36	352	14
C	1160	46	651	26	927	37	1194	47	0	0	0	0	1749	69	1577	62	751	30	1398	55	892	35	754	30
D	835	33	736	29	1157	46	1226	48	2167	85	2369	93	684	27	295	12	1279	50	377	15	720	28	1370	54
E	83	3	386	15	286	11	107	4	289	11	81	3	95	4	22	1	30	1	53	2	14	1	59	2
F	4	0	9	0	55	2	10	0	81	3	88	3	8	0	0	0	6	0	15	1	0	0	3	0
G	0	0	1	0	13	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

N= 2538

TABLE V -D

BLDG. NO. GRADE 4 (COUNTRY/GRADE)

SECTION DATE 9/30/68

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, PA

LEVEL	NUM		P.V.		ADD		SUB		MULT		DIV		C.O.P.		FRAC		MONEY		TIME		S.O.M		GEOM	
	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT
A	37	1	0	0	28	1	0	0	0	0	0	0	0	0	41	2	0	0	0	0	0	0	0	0
B	168	7	334	13	31	1	0	0	0	0	0	0	0	0	371	14	206	8	352	14	416	16	154	6
C	766	30	417	16	445	17	643	25	0	0	0	0	1121	44	1477	58	510	20	1087	42	799	31	576	22
D	1338	52	1051	41	667	26	1287	50	1433	56	1980	77	987	39	535	21	1483	58	845	33	1242	48	1579	62
E	212	8	710	28	893	35	503	20	1098	43	536	21	414	16	132	5	270	11	207	8	90	4	232	9
F	39	2	39	2	339	13	85	3	29	1	44	2	26	1	5	0	92	4	64	2	14	1	20	1
G	1	0	4	0	151	6	42	2	0	0	1	0	12	0	0	0	0	0	6	0	0	0	0	0
H	0	0	6	0	7	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

N= 2561

BLDG. NO.

TABLE V-E

GRADE 5 (COUNTRY/GRADE)

SECTION DATE 9/30/69

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, PA

LEVEL	NUM FREQ	NUM PRCNT	P.V. FREQ	P.V. PRCNT	ADD FREQ	ADD PRCNT	SUB FREQ	SUB PRCNT	MULT FREQ	MULT PRCNT	DIV FREQ	DIV PRCNT	C.O.P. FREQ	C.O.P. PRCNT	FRAC FREQ	FRAC PRCNT	MONEY FREQ	MONEY PRCNT	TIME FREQ	TIME PRCNT	S.O.M GEOM FREQ	S.O.M GEOM PRCNT
A	7	0	0	0	3	0	0	0	0	0	0	0	0	0	18	1	0	0	0	0	0	0
B	105	5	191	9	12	1	0	0	0	0	0	0	0	0	246	11	150	7	170	8	190	9	101	5
C	462	21	166	8	205	9	270	12	0	0	0	0	625	29	988	46	318	15	580	27	464	21	301	14
D	1067	49	789	36	277	13	719	33	617	28	1095	50	742	34	510	24	913	42	714	33	1047	48	1092	50
E	364	17	756	35	708	33	693	32	1294	60	833	38	632	29	349	16	496	23	443	20	384	18	575	26
F	152	7	196	9	575	26	326	15	249	11	236	11	103	5	54	2	293	14	230	11	79	4	97	4
G	13	1	46	2	353	16	156	7	10	0	6	0	65	3	5	0	0	0	33	2	6	0	4	0
H	0	0	27	1	37	2	6	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0

N= 2170

BLDG. NO.

GRADE 6 TABLE V -F (COUNTRY/GRADE)

SECTION DATE 9/30/68

REPORT FRO
RESEARCH FOR BETTER SC
121 S. BROAD
PHILADELPHIA,

LEVEL	NUM		P.V.		ADD		SUB		MULT		DIV		C.O.P.		FRAC		MONEY		TIME		S.O.M		GEOM	
	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT
A	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
B	38	2	78	4	7	0	0	0	0	0	0	0	0	0	104	6	218	12	78	4	72	4	30	2
C	222	12	110	6	99	5	116	6	0	0	0	0	377	20	452	24	115	6	310	17	247	13	195	10
D	631	34	378	20	99	5	351	19	270	14	526	28	433	23	404	22	548	29	430	23	709	38	580	31
E	595	32	774	41	391	21	581	31	949	51	700	37	609	32	672	36	441	24	434	23	522	28	719	38
F	305	16	220	12	573	31	429	23	573	31	570	30	217	12	204	11	552	29	522	28	288	15	329	18
G	69	4	200	11	586	31	378	20	66	4	72	4	214	11	31	2	2	0	102	5	38	2	23	1
H	9	0	116	6	121	6	21	1	18	1	8	0	26	1	2	0	0	0	0	0	0	0	0	0

N= 1876

BLDG. NO.

GRADE 7

SECTION

TABLE V-G

(COUNTRY/GRADE)

DATE 9/30/69

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, PA

LEVEL	NUM FREQ	NUM PRCNT	P.V. FREQ	P.V. PRCNT	ADD FREQ	ADD PRCNT	SUB FREQ	SUB PRCNT	MULT FREQ	MULT PRCNT	DIV FREQ	DIV PRCNT	C.O.P. FREQ	C.O.P. PRCNT	FRAC FREQ	FRAC PRCNT	MONEY FREQ	MONEY PRCNT	TIME FREQ	TIME PRCNT	S.O.M FREQ	S.O.M PRCNT	GEOM FREQ	GEOM PRCNT
A	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	3	2	3	2	0	0	0	0	0	0	0	0	0	0	6	3	61	35	8	5	2	1	3	2
C	8	5	2	1	4	2	7	4	0	0	0	0	12	7	9	5	3	2	15	9	19	11	6	3
D	53	30	33	19	8	5	30	17	24	14	36	21	45	26	42	24	39	22	35	20	47	27	43	25
E	31	18	44	25	25	14	34	20	52	30	46	26	34	20	50	29	32	18	33	19	38	22	56	32
F	64	37	10	6	57	33	53	30	71	41	58	33	30	17	48	28	39	22	49	28	54	31	55	32
G	12	7	50	29	52	30	47	27	20	11	32	18	49	28	16	9	0	0	34	20	14	8	11	6
H	3	2	32	18	27	16	3	2	7	4	2	1	4	2	3	2	0	0	0	0	0	0	0	0

N= 174

TABLE V-H

BLDG. NO.

GRADE 8 (COUNTRY/GRADE)

SECTION DATE 9/30/69

REPORT FROM
RESEARCH FOR BETTER SCH
121 S. BROAD ST
PHILADELPHIA, PA

LEVEL	NUM FREQ	NUM PRCNT	P.V. FREQ	P.V. PRCNT	ADD FREQ	ADD PRCNT	SUB FREQ	SUB PRCNT	MULT FREQ	MULT PRCNT	DIV FREQ	DIV PRCNT	C.C.P. FREQ	C.C.P. PRCNT	FRAC FREQ	FRAC PRCNT	MONEY FREQ	MONEY PRCNT	TIME FREQ	TIME PRCNT	S.C.M GEOM FREQ	S.C.M GEOM PRCNT
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	2	2	2	2	0	0	0	0	0	0	0	0	0	0	2	2	17	21	2	2	3	4
C	4	5	6	7	6	7	3	4	0	0	0	0	9	11	10	12	0	0	4	5	4	5
D	10	12	7	9	0	0	6	7	5	6	6	7	6	7	8	10	4	5	6	7	13	16
E	19	23	11	14	9	11	12	15	18	22	19	23	2	15	14	17	8	10	7	9	22	27
F	16	20	10	12	15	19	21	26	31	38	30	37	25	31	33	41	41	51	47	58	32	40
G	28	35	33	41	42	52	36	44	25	31	25	31	27	33	14	17	10	12	14	17	7	9
H	2	2	12	15	9	11	3	4	2	2	1	1	2	2	0	0	1	1	1	1	0	0

LEVEL	S.C.M GEOM FREQ	S.C.M GEOM PRCNT
A	0	0
B	4	5
C	2	2
D	13	16
E	17	21
F	39	48
G	6	7
H	0	0

N= 81

BLDG. NO.

TABLE V-I

GRADE SP EO (COUNTRY/GRADE)

SECTION DATE 9/30/69

REPORT FROM
RESEARCH FOR BETTER SCHOO
121 S. BROAD ST
PHILADELPHIA, PA.

LEVEL	NUM		P.V.		ADD		SUB		MULT		DIV		C.O.P.		FRAC		MONEY		TIME		S.O.M		GEOM		S.
	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FREQ	PRCNT	FR P
A	8	3	0	0	2	1	0	0	0	0	0	0	0	0	25	10	0	0	0	0	1	0	1	0	
a	69	28	117	48	36	15	0	0	0	0	1	0	0	0	51	21	118	48	102	41	124	50	81	33	
C	69	28	32	13	77	31	103	42	0	0	0	0	157	64	87	35	27	11	58	24	33	13	57	23	2
D	51	21	49	20	31	13	59	24	133	54	147	60	41	17	31	13	50	20	37	15	47	19	60	24	
E	23	9	19	8	27	11	28	11	54	22	37	15	16	7	16	7	26	11	14	6	22	9	27	11	
F	23	9	8	3	38	15	21	9	43	17	40	16	13	5	23	9	25	10	33	13	16	7	11	4	
G	3	1	12	5	22	9	35	14	10	4	20	8	15	6	12	5	0	0	2	1	3	1	9	4	
H	0	0	9	4	13	5	0	0	6	2	1	0	4	2	1	0	0	0	0	0	0	0	0	0	

N= 246

TABLE V-J

BLDG. NO.

GRADE OTHER (COUNTRY/GRADE)

SECTION

DATE 9/30/69

REPORT FROM
RESEARCH FOR BETTER SCHOOL
121 S. BROAD ST
PHILADELPHIA, PA.

LEVEL	NUM FREQ	NUM PRCNT	P.V. FREQ	P.V. PRCNT	ADD FREQ	ADD PRCNT	SUB FREQ	SUB PRCNT	MULT FREQ	MULT PRCNT	DIV FREQ	DIV PRCNT	C.O.P. FREQ	C.O.P. PRCNT	FRAC FREQ	FRAC PRCNT	MONEY FREQ	MONEY PRCNT	TIME FREQ	TIME PRCNT	S.O.M FREQ	S.O.M PRCNT	GEOM FREQ	GEOM PRCNT	S. FREQ	S. PRCNT
A	498	19	0	0	425	16	0	0	0	0	0	0	0	0	437	17	0	0	0	0	0	0	0	0		
B	436	17	1152	44	339	13	0	0	0	0	0	0	0	0	486	19	1033	40	1036	40	1277	49	761	29		
C	655	25	330	13	530	20	1307	50	0	0	0	0	1666	64	1090	42	416	16	726	28	372	14	383	15	25	
D	751	29	608	23	394	15	672	25	1659	64	1927	74	512	20	224	9	732	28	464	18	689	27	1057	41		
E	160	6	342	13	385	15	327	13	672	26	381	15	265	10	232	9	229	9	147	6	177	7	266	10		
F	79	3	98	4	280	11	163	6	239	9	250	10	59	2	106	4	179	7	190	7	67	3	116	4		
G	8	0	40	2	214	8	114	4	17	1	31	1	78	3	13	1	0	0	26	1	7	0	6	0		
H	2	0	19	1	32	1	6	0	2	0	0	0	9	0	1	0	0	0	0	0	0	0	0	0		

N= 2589

TABLE VI

BLDG. NO. 00001 GRADE 4

SECTION 10 DATE 11-6-68

Report from
Research for Better Schools
121 S. Broad St.
Philadelphia, Pa.

PUPIL NAME	NUM			PV			ADD			SUB			MULT			DIV			COP			FRAC			M			T			SOM			G			ST			TOTAL SKILL CO
	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	LV	SK	CP	
1	E	06	05	E	PO	07	H	PL	00	G	PL	00	F	PL	00	E	PO	07	F	PL	00	E	PO	06	F	PL	00	F	PL	00	D	PO	05	E	PL	00	D	PO	04	
2	E	PO	13	E	PL	00	G	PL	00	G	PL	00	E	PL	00	E	PL	00	E	PL	00	E	PL	00	E	PL	00	D	PO	10	D	PO	05	D	PO	03	D	PO	04	34
3	F	PL	00	F	PL	00	G	PL	00	E	PO	03	E	04	03	E	PL	00	E	PL	00	E	PL	00	E	PL	00	E	PL	00	D	PO	04	E	PL	00	D	PO	04	35
4	D	PL	00	D	PL	00	F	PL	00	C	PL	00	D	PL	00	D	PL	00	D	PL	00	C	PO	04	D	PL	00	C	PL	00	B	PO	04	D	PL	00	C	PL	00	8
•																																							
•																																							
•																																							
27	E	PO	13	E	PR	10	D	PO	13	E	PL	00	E	PL	00	E	PL	00	B	PO	11	E	PL	00	E	PO	03	F	PL	00	D	PO	05	E	PL	00	D	PO	04	59

KEY

Mathematics Areas

NUM - Numeration
PV - Place Value
ADD - Addition
SUB - Subtraction
MULT - Multiplication
DIV - Division
COP - Combination of Processes
FRA - Fractions
MON - Money
TIM - Time
SOM - Systems of Measurement
GEO - Geometry
ST - Special Topics

Abbreviations

LV - Level (A - H)
SK - Skill or Present Status
CP - Number of Skills Completed

PL - Placement
PR - Pretest
PO - Posttest

TABLE VII

SUMMARY OF SKILLS COMPLETED

PLACEMENT TO NOVEMBER 6, 1968

Bldg. No.: 00001 Grade: 4

Section: 10 Date: 11-6-68

NUMBER OF SKILLS COMPLETED	For Pupils Currently Working in Level			
	B	C	D	E
Q3 - Percentile 75	3.10	3.39	5.50	6.10
Q2 - Percentile 50	2.70	2.84	4.07	5.20
Q1 - Percentile 25	1.50	1.93	3.60	3.10
Mean	2.38	3.23	4.83	5.57
Standard Deviation	.93	2.28	2.53	3.21
N Pupil Units*	8	35	40	7

TOTAL SKILLS COMPLETED: 465

*One count for each unit; that is a pupil working in B-NUM and B-PV will receive two Level B counts.

TABLE VIII: **NUMBER OF PUPILS BY PRESENT LEVEL BY AREA NOVEMBER 1968**

NATIONAL SUMMARY

Counts only include pupils who have mastered one or more skills in area since placement.

ALL GRADES

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	661		207					277					
B	1785	1283	535					648	463	748	929	269	
C	2340	1182	945	523			1213	2260	654	1306	1034	461	
D	2559	1393	345	747	256	548	843	1354	566	620	782	440	1630
E	1350	649	240	387	476	323	343	385	172	190	276	252	526
F	239	125	65	62	173	132	40	117	78	62	47	62	75
G	69	27	57	68	34	21	27	14		32	25	7	20
H		16	15	3	12	4	4	1					

GRADE 1

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	427		142					74					
B	622	93	63					26	15	11	15	2	
C	35	11	114	1			3	14	6	27	11	83	

GRADE 2

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	72		21					110					
B	621	553	278					175	170	270	332	95	
C	626	311	238	84			88	172	105	164	184	80	
D	83	43	19	26	1		20	10	11	8	7	20	15
E	1				5	2						1	

TABLE VIII (CONTD.)

GRADE 3

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	8		3					38					
B	189	278	80					191	138	251	275	86	
C	745	370	238	199			359	583	184	358	228	93	
D	426	196	90	117	19	34	64	80	39	64	37	30	143
E	28	16	8	5	6	5	6	2	3	2	2	2	2
F		1	1			1			1	1			

GRADE 4

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	23		1					7					
B	63	104	28					91	42	78	101	32	
C	377	187	126	106			289	627	153	308	259	86	
D	762	393	118	256	72	153	205	377	151	195	182	99	432
E	200	131	70	83	57	50	62	44	36	37	26	26	52
F	9	9	4	5	5	4	1	4	5	5		1	1
G	1		3		1								

GRADE 5

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	1							2					
B	17	35	5					39	14	28	31	15	
C	165	84	62	57			192	440	114	202	159	48	
D	625	357	61	178	94	178	226	419	132	120	209	103	394
E	329	150	60	84	125	71	63	76	44	48	51	56	111
F	24	25	19	10	20	14	4	8	7	5	5	1	5
G	1	2	10	10			1			1		1	
H			1		1		2						

TABLE VIII (CONTD.)

GRADE 6

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
B	5	13	4					18	5	11	11	5	
C	76	38	37	25			119	123	17	67	54	24	
D	283	149	20	91	47	121	165	292	148	110	208	84	469
E	510	233	62	139	196	129	129	177	51	63	116	94	247
F	110	48	12	23	70	57	10	39	27	11	14	18	30
G	16	2	10	11	6	4	2	2		9	3	1	4
H		1	3	1			1						

GRADE 7

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
B	1							1	1	1			
C	3						3	6		6	4	1	
D	22	9	3	6	3	10	11	15	10	8	12	4	40
E	42	17	3	10	21	19	18	25	9	7	15	16	62
F	27	7	8	4	29	16	4	15	6	8	7	13	10
G	17	3	8	9	7	3	3	3		6	7	2	9
H		5	4	2	5	3							

GRADE 8

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
B										1			
C	1	3	2					4			2	1	
D	5	6		2	2	1	7	4	2	3	5	3	5
E	18	8	5	9	14	6	8	11	3	3	18	17	16
F	19	6	6	6	16	22	10	29	12	21	12	18	22
G	20	18	22	28	14	11	20	8		10	12	2	6
H		8	5		1	1							

TABLE VIII (CONTD.)

SPECIAL EDUCATION

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	4		1					16					
B	55	45	5					14	16	15	22	6	
C	22	27	14	9			14	19	6	17	14	5	
D	25	24	1	5		4	15	18	9	15	13	13	10
E	26	15	6	7	8	8	8	9	2	5	10	6	6
F	8	7	1	1	7	2	2	6	3	4	4	4	2
G	6			1	1	2				3	2		
H							1						

OTHER

	NUM	PV	ADD	SUB	MUL	DIV	COP	FRA	MON	TIM	SOM	GEO	ST
A	126		39					30					
B	212	162	72					93	62	82	142	28	
C	290	151	114	42			146	272	69	155	120	41	
D	320	210	32	63	15	43	112	138	58	89	99	60	105
E	189	76	26	49	43	32	44	38	21	24	36	32	29
F	40	21	14	13	24	16	9	16	16	6	5	7	4
G	8	2	4	9	4	1	1	1		2	1		1
H		2	2		5			1					

TABLE IX

REPORT OF STUDENT PROGRESS
NOVEMBER 1968

S K I L L S C O M P L E T E D

GRADE	NUMBER OF PUPILS	MEAN SKILLS
ALL	13344	16.25
1	1337	10.04
2	2038	12.56
3	2150	14.23
4	2106	18.34
5	1698	20.08
6	1547	20.25
7	125	23.03
8	46	29.43
OTHER	2066	16.57
SP.ED.	231	20.55

TABLE X

REPORT OF STUDENT PROGRESS
FEBRUARY 1969

S K I L L S C O M P L E T E D

GRADE	NUMBER OF PUPILS	MEAN SKILLS
ALL	15517	39.10
1	1450	24.48
2	2189	30.31
3	2335	33.62
4	2466	40.38
5	2028	48.78
6	1859	51.50
7	227	68.58
8	80	76.54
OTHER	2700	37.69
SP.ED.	183	47.54

TABLE XI

REPORT OF STUDENT PROGRESS

NUMBER OF SKILLS COMPLETED

ALL GRADES

	NUMERATION						PLACE VALUE					
	NOVEMBER			FEBRUARY			NOVEMBER			FEBRUARY		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD
A	706	8.31	3.07	359	9.72	2.86						
B	1916	9.65	4.23	1998	13.95	5.58	1416	2.83	.44	1592	2.89	.39
C	2434	7.78	3.95	3141	11.27	5.50	1249	5.09	1.74	2601	5.86	1.97
D	2527	5.88	3.70	4423	8.48	5.04	1371	7.82	2.58	3307	9.07	3.20
E	1277	8.38	3.57	2910	10.40	4.34	632	8.50	3.85	1958	10.48	4.43
F	218	5.66	3.85	837	9.53	5.44	104	8.16	4.23	601	10.63	5.36
G	35	8.37	3.99	181	9.41	4.65	9	4.00	1.50	105	6.44	6.06
H				7	11.57	4.16	3	2.00	0.00	33	2.64	2.40

	ADDITION						SUBTRACTION					
	NOVEMBER			FEBRUARY			NOVEMBER			FEBRUARY		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD
A	213	2.76	.62	442	2.88	.43						
B	550	5.71	3.21	1158	7.11	3.20						
C	1176	7.06	3.79	2618	7.32	3.96	537	3.65	.83	1949	3.74	.73
D	343	6.94	2.79	1451	8.43	3.52	723	4.62	1.56	2367	4.91	1.68
E	228	7.47	3.74	913	8.51	4.11	359	3.87	1.86	1353	4.61	2.26
F	61	6.23	7.46	355	6.54	6.34	94	2.30	1.61	415	3.05	2.26
G	27	5.11	7.70	180	4.32	5.31	33	2.82	2.29	207	2.77	1.99
H	6	9.83	9.22	37	3.95	3.48	2	2.00	1.41	12	4.25	3.80

TABLE XI
(contd.)

	MULTIPLICATION						DIVISION					
	NOVEMBER			FEBRUARY			NOVEMBER			FEBRUARY		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD
A												
B												
C												
D	256	7.64	1.16	877	7.72	1.04	531	6.29	1.59	1655	6.43	1.47
E	442	8.70	3.23	1470	9.87	3.56	295	6.58	2.67	1220	7.25	2.73
F	149	9.65	4.46	613	12.48	5.23	107	6.98	3.37	490	8.49	3.49
G	15	10.13	4.94	134	12.09	6.07	8	8.63	4.93	106	8.41	3.84
H	7	31.57	4.28	22	13.64	8.50				12	9.67	8.34

	COMBINATION OF PROCESSES						FRACTIONS					
	NOVEMBER			FEBRUARY			NOVEMBER			FEBRUARY		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD		$\bar{X}$	SD
A							297	2.72	.63	583	2.84	.51
B							710	2.28	.81	1047	2.67	1.11
C	1241	5.40	1.25	2351	5.66	1.00	2309	3.83	1.14	3576	4.15	1.28
D	827	5.92	2.41	2416	6.55	2.60	1318	5.74	2.26	3172	6.63	2.37
E	300	6.45	2.82	1377	9.90	3.32	362	6.75	2.95	1330	7.90	3.25
F	30	6.47	3.45	235	8.11	4.46	87	9.07	5.39	370	12.13	5.14
G	6	10.83	9.24	83	6.53	4.78	5	18.20	10.52	44	13.68	7.89
H	4	7.75	5.51	14	11.93	9.54	1	34.00		9	16.89	10.25

TABLE XI
(contd.)

	MONEY						TIME					
	NOVEMBER			FEBRUARY			NOVEMBER			FEBRUARY		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD
A												
B	490	3.81	.62	852	3.90	.52	806	2.97	.20	1109	2.98	.15
C	699	4.30	1.33	1775	4.58	1.53	1361	2.47	1.02	2914	2.74	1.19
D	533	5.54	1.89	1840	6.13	2.08	587	7.22	4.01	2231	7.94	4.04
E	133	5.91	2.81	772	6.07	2.81	160	9.93	3.82	835	11.42	4.09
F	61	10.30	7.23	646	12.45	6.62	36	9.89	6.48	215	10.13	6.15
G							20	19.70	11.07	76	10.83	10.03

	SYSTEMS OF MEASUREMENT						GEOMETRY					
	NOVEMBER			FEBRUARY			NOVEMBER			FEBRUARY		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD
A												
B	1005	3.84	.58	1547	3.92	.44	296	1.99	.08	548	2.00	.04
C	1075	3.66	1.30	2641	4.15	1.61	503	2.11	.48	1254	2.26	.69
D	720	4.35	1.65	2595	4.85	1.93	412	2.70	.67	1561	2.90	.85
E	241	5.71	2.91	914	7.07	2.87	203	5.60	3.16	1024	6.01	3.30
F	34	6.21	3.93	189	6.71	3.87	34	8.74	3.33	200	10.69	4.05
G	8	8.25	6.99	67	5.28	4.68	3	15.33	9.25	36	15.25	8.19
H										3	23.00	5.20

TABLE XI
(contd.)

REPORT OF STUDENT PROGRESS

NUMBER OF SKILLS COMPLETED

KEY

N = Number of Pupils working in that Unit.

Total population in November was 13,344 pupils.
Total population in February was 15,517 pupils.

$\bar{X}$ = Mean

SD = Standard Deviation

For example:

1. For example in November: the 706 pupils who worked in A-NUM completed an average of 8.31 skills with a standard deviation of 3.07 in Numeration.

2. The 5 pupils who worked in F-Fractions completed an average of 18.20 skills with a standard deviation of 10.52 in Fractions.